
Claims

- 1) A method for electronically transferring funds from the account of a financial institution's customer to the account of the recipient located at said FI or at another FI comprising:
 - (a) providing software capable of generating a pair of public-private electronic signature keys based on the Public Key Infrastructure (PKI) specification,
 1. implemented using various encryption algorithms including RSA public key encryption from RSA Security Inc or any other suitable public private key encryption algorithms,
 2. a means where keys may be generated by said FI or said customer, and if said keys are generated by said customer, the public key is provided to said FI where it is included in an electronic signing certificate that is created by said FI or its agents, for said customer,
 - (b) providing a means where said customer is given authorization to create electronic funds transfers after said customer's identity and account information are verified by:
 1. requiring said customer to communicate to said FI, personal identifying information, information about the account to be used when creating funds transfer transactions, the public key to be used to verify funds transfer transactions created by said customer, if said public-private key was not generated by said FI, and any other information that is needed by said FI,
 2. said FI or an agent acting on its behalf, acting as a certification authority, verifies the identity of said customer and the right to use the accounts specified, creates an electronic signing certificate by certifying the identity and ownership of said public key, specifying any terms and conditions regarding the use of said public key and its associated private keys,
 3. authorize said customer to create electronic funds transfers by providing said customer with the following, said electronic signing certificate, private electronic signature keys if the keys are generated by said FI or one of its agent, account reference numbers or IDs that are used to identify the accounts where the funds will be transferred from,
 - (c) providing various software means wherein said customer creates an electronic funds transfer transaction by:

1. using said customers' private electronic signature key to sign (encrypt) the hash of data including the account or account reference ID, the value of the funds to be transferred and any additional data needed to identify the transaction, specify uses or purposes, or the encrypting the data directly, and combining the signed data, the signature value which is the output of signing the data, and said signing certificate into an electronic funds transfer transaction data stream,
 2. combining the signature value and the signing certificate and signing data to create an electronic signature,
- (d) providing various means wherein said electronic funds transfer transaction data stream is transmitted electronically to the entity receiving the funds by various communication means including EMAIL, HTTP, FTP, INSTANT MESSAGING (IM),
- (e) providing a means wherein the entity receiving said funds transfer transaction data stream, using software means, loads and validates said transaction data, and fails said validation if any of the following conditions exist, the transaction data is not what was expected, the electronic signature is invalid or its signing certificate has expired,
- (f) Providing a means wherein the recipient of said funds transfer transaction data stream, after successfully validating the transaction data, adds the account information where the funds will be deposited, to the transaction data stream it received,
- (g) Providing a means wherein the validated funds transfer transaction data stream and the account information added by said recipient, is transmitted to the funds transfer transaction creator's FI,
- (h) Providing a means wherein the funds transfer transaction creator's FI, upon receipt of the funds transfer transaction data stream along with the funds recipient account information, perform similar validation as the funds recipient and any other validation it deems necessary before said FI transfers the funds from the funds transfer transaction creator's account to the account of the funds recipient or to the funds recipient's FI using existing FI to FI funds transfer means.

whereby consumers and other entities using this invention, leverages their existing means of electronic communication, including email and instant messaging, and an account including checking or saving account, at a FI that facilitates funds transfers, to transfer funds in the form of an electronic check to other consumers and businesses that also leverage their existing electronic communications means, this invention and accounts at their FI to process and deposit funds from said electronic check or funds transfer transaction into the recipient's account,

whereby consumers and other users of this invention receive tangible savings of time and money when they transfer funds to other consumers, businesses, and family members, including children in college, by not having to purchase postage stamps, envelopes, money orders or write paper check, making the trip to deliver the envelope to the post office or utilizing expensive money transfer services including Western Union or American express's MoneyGram,

whereby the recipient of the funds from the electronic check of this invention, further saves time by not having to visit the office or location of it's FI to deposit the electronic funds transfer or electronic check,

Whereby consumers and businesses can receive the benefits of transmitting funds electronically without spending valuable resources to purchase expensive communications systems, even when the funds being transferred are small.

- 2) The electronic funds transfer method of claim 1 further including transferring funds as electronic check comprising:
 - a. Providing a means wherein the type of account receiving the funds being transferred from include checking, saving account, money market, or brokerage account,
 - b. the type of account receiving the funds include checking, savings account, money market, or brokerage account,
 - c. providing a means to add additional data elements to said transaction data stream thereby allowing said data stream to be used an electronic check,
 - d. provide a means wherein said electronic check is transmitted to the check recipient by email, instant messaging or any suitable and available electronic communication means,

whereby consumers and other entities using this invention, leverages their existing means of electronic communication, including email and instant messaging, and accounts including checking or savings account, at a FI that facilitates funds transfers, to transfer funds in the form of an electronic check to other consumers and businesses that also leverage their existing electronic communications means, this invention and accounts at their FI to process and deposit funds from said electronic check or funds transfer transaction into the recipient's account,

whereby consumers and other users of this invention receive tangible savings of time and money when they transfer funds to other consumers, businesses, and family members, including children in college, by not having to purchase postage stamps, envelopes, money orders or write paper checks, make a trip

to deliver the envelope to the post office or utilize expensive money transfer services including Western Union or American express's MoneyGram,

whereby the recipient of the funds from the electronic check of this invention, further saves time by not having to visit the office or location of it's FI to deposit the electronic funds transfer or electronic check,

Whereby consumers and businesses can receive the benefits of transmitting funds electronically without spending valuable resources to purchase expensive communications systems, even when the funds being transferred are small.

- 3) The method of claim 1 further including the receipt and payment of bills electronically comprising:
 - (a) requiring bill senders to obtain a pair of public-private electronic signature keys wherein said keys are based on the Public Key Infrastructure (PKI) specification and said key may be generated by various encryption algorithms including RSA public key encryption from RSA Security Inc,
 - (b) a means wherein said bill senders receive an electronic signing certificate created by an entity that is recognized by the bill sender and bill payer as performing the role of a certification authority by verifying the identity of said bill sender, certifying that said bill sender owns said public key, and specify the terms and conditions for how the certificate, public key and its associated private key are to be used,
 - (c) providing a means wherein said bill sender creates and electronically signs said bills using the bill senders private electronic signature key,
 - (d) providing a means wherein said bills are specially formatted thereby allowing software that implements the electronic funds transfer method of claim 1, to open and have access to the data elements in said bill,
 - (e) providing a means wherein said bill is transmitted electronically to said bill payer by a communication means including EMAIL, HTTP, FTP, or INSTANT MESSAGING (IM)
 - (i) providing a means wherein the bill payer, using software that implements the electronic funds transfer method of claim 1, opens said electronic bill and rejects the bill if any of the following conditions exist, the bill data is incorrect or the bill's electronic signature is invalid,
 - (j) providing a means wherein the bill payer creates and transmits to the bill sender an electronic funds transfer transaction to be used as payment for said bill,

Whereby, bill senders leverage the bill payers existing electronic communications means to transmit bills to and receive payment electronically from said bill payers using the electronic funds

transfer process of this invention, thereby reducing the turnaround time and expense involved in sending and processing bills, over the conventional paper and postal process,

Whereby bill payers receiving the electronic bill of this invention and making payments electronically, have an advantage over bill payers that receive electronic bills as text email and are still required to print the text email bills and make payments using existing conventional methods.

- 4) The electronic bill receipt and electronic funds transfer system of claim 3 further including extracting payment information from the electronic bill and populating the electronic funds transfer transaction that will be used to pay the bill, with payment data extracted from the bill thereby reducing the amount of data the bill payer enters to complete the electronic funds transfer transaction,

Whereby the bill payer benefits by spending less time entering the data required in completing the electronic funds transfer transaction, thereby making the bill paying experience more convenient.

- 5) The electronic bill receipt and payment system of claim 3 further including creating an integrated software environment to receive and pay electronic bills using the electronic funds transfer method of this invention comprising:
 - (a) providing software that combines the electronic communications by the bill payer with the electronic funds transfer and bill payment methods of this invention thereby removing the need for the bill payer to install or use separate software to receive and pay bills electronically,

Whereby entities including Internet Service Providers (ISP), phone companies, that provide the software used by said bill payer to communicate electronically, provide an added benefit to the bill payer by integrating or embedding the bill payment method of this invention into the communication software used by the bill payer thereby providing a convenient bill payment software environment.

- 6) The integrated electronic communication and bill receipt and payment software environment of claim 5 further including a means wherein bill payers notify bill senders that they wish to receive and pay their bills electronically by means of this invention

Whereby entities including Internet Service Providers (ISP), phone companies, that provide the software used by the bill payer to communicate electronically, provide an added benefit to the bill payer by integrating or embedding the bill payment method of this invention into the communication

software thereby providing a convenient software environment where the bill payer can receive and pay bills.

- 7) The integrated electronic communication and bill receipt and payment software environment of claim 5 further including a means wherein the communications service provider provides another unique electronic communications address to the bill payer, that is supplied to bill senders, thereby allowing the service provider to restrict communications using this electronic address to bills or bill related communication by filtering out communications that do not have a bill's electronic signature, whereby the bill payer's fear of receiving unsolicited communications if the bill payer's regular electronic communication address is disclosed to the bill sender is alleviated.
- 8) The integrated electronic communication and bill receipt and payment software environment of claim 5 further including a means wherein electronic communications service providers using the electronic signature accompanying bills as a means of identifying the sender and as a means to filter out unwanted communication.
- 9) The electronic check funds transfer method of claim 2 further including creating an integrated software environment to create, send and received electronic funds comprising:
 - (a) providing software that combines the electronic communications of the electronic check creator with the functionality of creating and receiving electronic checks of this invention thereby removing the need for the bill payer to install or use separate software to create, send or receive checks electronically,

Whereby entities including Internet Service Providers (ISP), phone companies, that provide the software used by the check creator or the check recipient, to communicate electronically, provide an added benefit to the user by integrating or embedding the electronic check funds transfer method of this invention into the communication software used by the check sender or recipient thereby providing a convenient funds transfer software environment.

- 10) The electronic bill receipt and electronic funds transfer system of claim 3 further including encrypting the electronic bill using information known to both the bill sender and receiver as the encryption key, thereby requiring the recipient to supply the encryption key used to encrypt the bill before gaining access to it, whereby anyone who may gain unauthorized access the recipient's electronic communication system is prevented from accessing the bill if they do not have the decryption key.

- 11) The electronic funds transfer method of claim 1 further including encrypting the electronic funds transfer using information known to both the sender and receiver as the encryption key, thereby requiring the recipient to supply the encryption key used to encrypt the funds transfer before gaining access to it, whereby anyone who may gain unauthorized access the recipient's electronic communication system is prevented from accessing the electronic funds transfer if they do not have the decryption key.